NEW SPECIES

"Ruminococcus phoceensis," a new species identified from human stool from an obese patient before bariatric surgery

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Abstract

We report here the main characteristics of a new bacterium species, *"Ruminococcus phoceensis"* strain AT10 (CSUR = P2086, DSM = 100837). This bacterium was isolated from the faeces of a 37-year-old woman from Marseille, France, with morbid obesity before bariatric surgery.

Keywords: Bariatric surgery, culturomics, human gut microbiota, *Ruminococcus phoceensis*, taxonomy
Original Submission: 22 July 2016; **Revised Submission:** 5 August 2016; **Accepted:** 6 September 2016
Article published online: 10 September 2016

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In July 2012, as a part of culturomics study [1] of the human microbiome, we isolated a new bacterial strain from the faeces of a 37-year-old woman from Marseille, France, with morbid obesity before she underwent bariatric surgery. Written consent was obtained from the patient at the nutrition, metabolic disease and endocrinology service of La Timone Hospital, Marseille, France. The study and the assent procedure were approved by the local ethics committee of IFR 48 under assent number 09-022, 2010.

Initial growth was obtained after 21 days of culture in a blood culture bottle (BACTEC Lytic/10 Anaerobic/F culture vials; Le Pont de Claix, Isère, France) enriched with 4 mL of sheep's blood and 4 mL of rumen under anaerobic atmosphere at 37°C. Agar-grown (Columbia agar + 5% sheep's blood; bioMérieux, Marcy l'Etoile, France) colonies were opalescent with a mean diameter of 0.5 to 1 mm. A bacterial strain could not be identified by our systematic matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF MS) screening on Microflex spectrometer (Bruker Daltonics, Bremen, Germany) [2], so 16S rRNA gene sequencing was used for its identification.

Bacterial cells were Gram-positive staining, rod shaped and polymorphic, ranging 0.2–0.5 × 1.2–1.5 µm by electron microscopy. Strain AT10 was catalase positive and oxidase negative. The 16S rRNA gene was sequenced using fD1-rP2 primers as previously described with a 3130-XL sequencer (Applied Biosciences, Saint Aubin, France) [3]. Strain AT10 exhibited 98.2% of 16S rRNA gene sequence similarity with *Ruminococcus torques* ATCC 27756, the phylogenetically closest species with standing in nomenclature (Fig. 1), which putatively classifies it as a member of the genus *Ruminococcus* within the family *Ruminococcaceae* in the *Firmicutes* phylum. Strain AT10 exhibited a 16S rRNA gene sequence divergence of >1.3% (1.8) [4] with its phylogenetically closest species with standing in nomenclature, *Ruminococcus torques* [5].

We propose the creation of this new species, *"Ruminococcus phoceensis"* (pho.ce.en.sis, N.L. gen. n. *phoceensis,* based on the acronym of the Phocean city where the type strain was isolated). Strain AT10 is the type strain of the new species *"Ruminococcus phoceensis."*

http://dx.doi.org/10.1016/j.nmni.2016.09.004

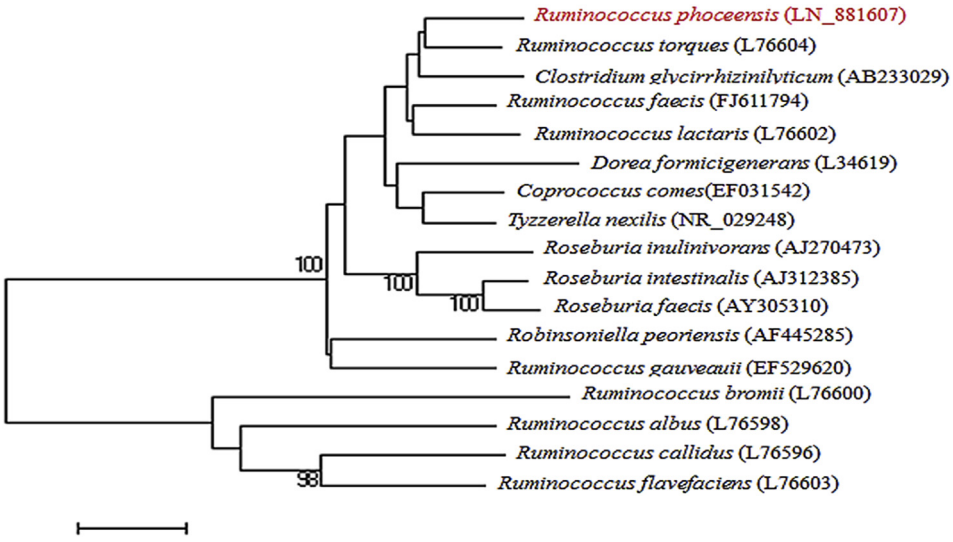

FIG. 1. Phylogenetic tree showing position of strain AT10 relative to other phylogenetically close neighbours. Sequences were aligned using CLUSTALW, and phylogenetic inferences were obtained using maximum-likelihood method within MEGA software. Numbers at nodes are percentages of bootstrap values obtained by repeating analysis 500 times to generate majority consensus tree. Only bootstraps scores of at least 90% were retained. Scale bar indicates 2% nucleotide sequence divergence.

MALDI-TOF MS spectrum accession number

The MALDI-TOF MS spectrum of this strain is available online (http://mediterranee-infection.com/article.php?laref=256&titre=urms-database).

Nucleotide sequence accession number

The 16S rRNA gene sequence was deposited in GenBank under accession number LN881607.

Deposit in a culture collection

Strain AT10 was deposited in the Collection de Souches de l'Unité des Rickettsies and Deutsche Sammlung von Mikroorganismen (CSUR = P2086, DSM =100837).

Acknowledgements

The authors thank M. Lardière for English-language review. This study was funded by the Fondation Méditerranée Infection.

Conflict of Interest

None declared.

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